Explanation of active and reactive power (energy) flow in Calmet TE30

Application Note No05

In Fig1.1, the geometric representation of active and reactive power (energy) flow used in Calmet TE30 Power Quality Amalyzer and Energy Meter Tester is presented.

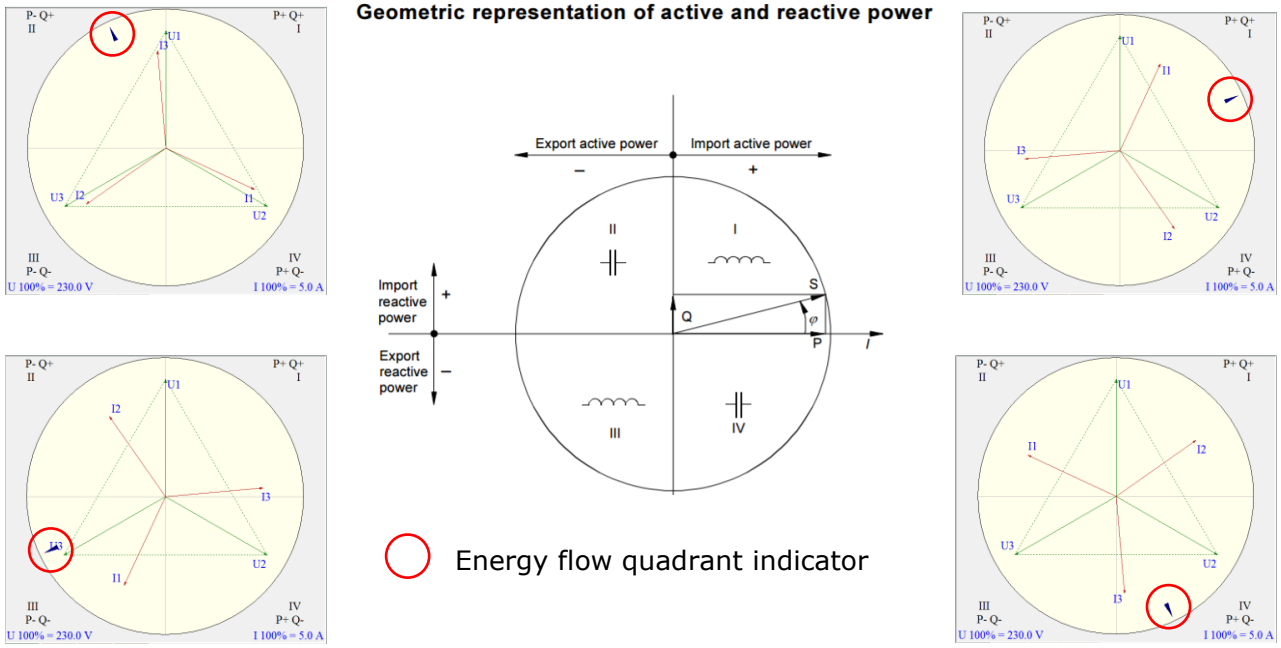

Fig1.1 Geometric representation of active and reactive power flow

Table1.1 Detailed description of power (energy) possible to select in Calmet TE30

Id	Symbol	Description
1	P	Active power – the sum of power consumption (import) and power supply (export, generation); P=(P+) – (P-); used in bidirectional measurements to evaluate total energy consumption.
2	P+	Active power – power consumption (import) – the most often used power (energy), which shows how much power (energy) is used by consumer.
3	P-	Active power – power supply (export, generation) – used to indicate how much power (energy) is delivered back by the consumer to the network; for example, in photovoltaic installations.
4	Q	Reactive power – the sum of reactive power (energy) consumption (import) and power (energy) supply (export, generation); Q=(Q+) – (Q-);
5	Q+	Reactive power – power (energy) consumption by consumer; the most often used power to identify if the customer needs to apply reactive power compensation circuits to increase the power factor to "1" direction.
6	Q-	Reactive power – power supply (export, generation); used to indicate how much power (energy) is delivered back by the consumer to the network;
7	S	Apparent power – calculated as S=U*I
8	PH1	Active power – first harmonic – same as power P, but only for the first harmonic of U and I; the sum of power consumption and power supply.
9	PH1+	Active power – first harmonic – same as power P+, but only for the first harmonic of U and I; power consumption; used to evaluate power (energy) usage for a pure sinusoidal signal.
10	PH1-	Active power – first harmonic – same as power P-, but only for the first harmonic of U and I; power supply.
11	QH1	Reactive power – first harmonic – same as power Q, but only for the first harmonic of U and I; the sum of power consumption and power supply.
12	QH1+	Reactive power – first harmonic – same as power Q+, but only for the first harmonic of U and I; power consumption; the new reactive energy meter standard requirement.
13	QH1-	Reactive power – first harmonic – same as power Q-; power supply

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